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ABSTRACT

In community college/high school 2 + 2 programs, a four-year program of technical training is begun in the last two years of high school and continued through two years of community college. In spite of a growing interest in such programs, current efforts have been limited to course articulation in which prerequisites for two-year college courses are taken in high school, rather than actual program articulation in which a sequence of courses are developed which can be undertaken by students beginning in high school. In 1989, a two-part study of community college/high school articulation was conducted in California. The first phase of the study sought to determine how 2 + 2 programs are defined and what their components are. This phase of the study brought together a panel of 10 vocational educators and administrators from the secondary and post-secondary levels and, using the Delphi consensus technique, examined opinions concerning the purpose, eligible participants, curriculum, credits, and time-frame for a 2 + 2 program. The second phase examined barriers to implementing such programs identified in surveys completed by 63 vocational instructional administrators. These barriers included the following: (1) difficulties in effectively informing parents and students of the existence and benefits of such programs; (2) the lack of funds to provide released time for planning and curriculum development; and (3) current state regulations that limit a community college to using credit by examination as the mechanism for granting college credit for articulated courses. In addition, it was found that perceptions of barriers were greater among the respondents less experienced with such programs. A list of eight recommendations emerging from the study, and the names of Delphi panel members and participating institutions are included. (JMC)

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2 + 2 Program Definition and Barriers to Implementation

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Maureen H. Ramer, Ed.D.
March 1991

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Executive Summary

In recent years, leaders in both secondary education and community colleges have shown a renewed interest in the concept of program articulation. As the interest in articulation has grown, so has the interest in developing "2 + 2" programs in which four-year technical training is begun in the last two years of high school and continued through two years of community college. The California legislature has repeatedly expressed interest in and support for 2 + 2 programs in California schools.

Although there is considerable interest in developing such programs, current efforts are limited to *course* articulation rather than *program* articulation. Course articulation means providing the prerequisites to specific community college courses in secondary schools—Introductory Drafting in high school, for example, followed by Advanced Drafting in community college. Program articulation would mean developing a coherent sequence of basic and more advanced courses, including mathematics and communication skills along with technical courses to be begun in secondary school and completed in the community college. Recent studies in California have revealed that educators in the field believe that there are more serious barriers to program articulation than to course articulation. If progress is to be made, it is necessary to know how educators define 2 + 2 programs and what they perceive the barriers to be. This monograph reports the results of a study carried out to obtain this information.

The study had three purposes:

- To determine how educators define 2 + 2 programs and their components.
- To identify what they perceive to be barriers to the implementation of 2 + 2 programs.
- To determine what light is shed by experience with 2 + 2 programs on these questions by comparing the perceptions of vocational instructional administrators of "experienced" community colleges, secondary districts, and regional occupational centers/programs with those of "inexperienced" ones.

The study was conducted in two parts. The first part determined how 2 + 2 programs are defined and what their components are. The consensus obtained from this part of the study served as the basis for the second part of the study, identifying barriers to implementation.

In Part I of the study, consensus was reached on seven components of the definition. Consensus was not reached on four items. Recommendations for future study of these four items are provided in this report.

Part II of the study identifies barriers to program articulation. The most frequently mentioned barriers fell into one of three categories: communications, resources, and policies.

In the *communications* category, the most significant barrier to successful program articulation was the task of informing students and their parents of the existence and benefits of 2 + 2 programs. In the *resources* category, the lack of funds to provide released time for planning and curriculum development was perceived as the most significant barrier. In the *policy* category, the barrier most often cited was the current state regulation that limits a community college to using only credit by examination as the mechanism for granting college credit for articulated courses taken at a high school or regional occupational center/program.

Experienced and inexperienced community college administrators had very similar perceptions about the obstacles to articulation. Administrators in secondary schools and regional occupational centers/programs, on the other hand, had quite different views. The study showed that among this group, perception of barriers decreased as experience increased.

Recommendations

The annual plans of the California Department of Education (CDE) and the Chancellor's Office of the California Community Colleges (COCCC) have continued to list the implementation of 2 + 2 programs as a goal. But 2 + 2 sequences at present are limited to course and not program articulation. Progress will take time, along with leadership and additional funding by state agencies. The following specific recommendations should be considered:

1. Each state educational agency should identify college and high school articulation chairs who can work together to develop programs and activities to assist in implementation.
2. The state agencies should jointly sponsor a forum for the purpose of clarifying the program definition and establishing standards for 2 + 2 programs.
3. The state agencies should jointly sponsor a task force to develop program models and to provide guidelines.
4. Community college faculty and administrators should familiarize themselves with the facilities and course offerings available at secondary schools and regional occupational centers/programs.
5. To make it easier for community colleges to grant college credit for work completed in secondary schools, the existing regulation regarding granting credit should be clarified, and examples provided.

6. State agencies should continue to fund grants to implement articulation.
7. State agencies should jointly make an effort to inform educators and the public about the existence of 2 + 2 programs, using appropriate media.
8. State agencies should sponsor the development of a model by which secondary-community college articulation can be evaluated.

As this report is being written, the federal Carl Perkins Vocational Education Act has been reauthorized. Renamed the Carl D. Perkins Vocational and Applied Technology Act, it includes a category specifically for Tech-Prep education (2 + 2) programs. With continued support and funds from the state agencies, progress in implementing this important program in California will undoubtedly continue.

Introduction

In recent years, leaders in both secondary education and community colleges have demonstrated a renewed interest in the concept of program articulation. As the interest in articulating community college and secondary offerings has grown, so has the interest in developing 2 + 2 programs. A 2 + 2 program is one that involves a tightly coordinated occupational instruction program for grades 11-14: 2 years of high school and 2 years of postsecondary technical courses. Such sequences usually involve a competency-based program for each technical specialty, as the Center for Occupational Research and Development (CORD) concluded in 1985.

The California legislature has repeatedly expressed interest in and support for the implementation of 2 + 2 programs in California schools, as reported by the Commission for the Review of the Master Plan for Higher Education, 1986 and by the California Postsecondary Education Commission, 1987. Community college and secondary level vocational educators have expressed similar views. Yet current efforts are limited to *course* articulation rather than *program* articulation.

Recent studies in California have revealed that educators in the field believe that it is easier to provide course articulation than program articulation (California, 1987; CPEC, 1987). And because the label "2 + 2" has been used broadly within the field, what ought to constitute a 2 + 2 program is not clear: there is no general agreement about what the essential components of such a program are. Without a common understanding of the use of this term and the framework of such programs, it is not possible for researchers or curriculum specialists to compare and evaluate such programs. If 2 + 2 programs are to be widely developed and put into operation, it is desirable for community college, secondary education, and business leaders to define this term consensually, to specify the components of 2 + 2 programs, and to identify and take steps to overcome the barriers to implementation.

Context of the Report

This study, undertaken as a dissertation within a doctoral program at Pepperdine University, was conducted and completed in 1989. As part of the procedure, letters of support were requested from the Directors of Vocational Education from the Chancellor's Office, California Community Colleges (COCCC) and the California Department of Education (CDE). Educators throughout the state have expressed interest in the results of the study.

The California Community College Administrators of Occupational Education (CCCAOE) encouraged this researcher to publish the findings of the study. Under the direction of CCCAOE, the author was appointed chair of the Ad Hoc Committee

on Articulation (see Appendix A). The committee was given two charges by CCCAOE:

- To assist with the analysis of the findings of the study to determine conclusions and recommendations.
- To facilitate the development of this monograph.

The committee completed its first charge in February 1990. As a result, this author was able to present the study with the conclusions and recommendations at two statewide articulation conferences in March 1990. The data for the study consist of responses to a survey mailed to 38 community colleges and 37 secondary districts or regional occupational centers/programs, of which 84% responded.

Design of the Study

The purposes of this study were threefold:

- To arrive at a consensual definition of 2 + 2 programs and their components by surveying educational and business leaders in the field of vocational education.
- To identify barriers to the implementation of 2 + 2 programs.
- To compare the perceptions of vocational instructional administrators of "experienced" community colleges/secondary districts/regional occupational centers/programs (ROC/Ps) and "inexperienced" community colleges/secondary districts/ROC/Ps with regard to barriers to the implementation of 2 + 2 programs.

The research was conducted in two parts. For each part, the design will be described and the findings and conclusions presented. Recommendations will follow. Part I deals with defining and describing 2 + 2 programs. Part II deals with identifying the barriers to implementing 2 + 2 programs.

Part I

The purpose of *Part I* was to determine an agreed-upon definition of 2 + 2 programs and to identify components of such programs. The researcher used a "Delphi" process. The objective of the Delphi technique is to obtain a consensus through a series of questionnaires with controlled feedback in which all respondents participate equally and anonymously. The panelists were asked to choose among alternatives such as these:

Beginning and ending points of the program:

a. Begin in grade 11 and end in grade 14.

b. Begin with any grade in high school and end in grade 14.

c. Begin with any grade in high school and end in any semester at the community college level.

d. None of the above.

e. Rationale for your position.

Eight people from California were selected to serve on the panel. Two additional people were added to the panel who were able to observe and comment on the issues from a national perspective. The 10 members of the panel are listed in Appendix B. Two rounds of questionnaires were conducted.

The definition and program components of 2 + 2 programs that resulted from this process constitute the field consensus definition of 2 + 2 programs. This definition and these components of 2 + 2 programs served as the basis for identifying barriers to implementation in Part II of the study.

Findings and Conclusions of Part I

In the Delphi survey instrument, the investigator addressed the program components listed below. The items in which consensus was reached to form the program definition are as follows:

- *Purpose:* The purpose of a 2 + 2 program is to eliminate unnecessary duplication of coursework, thus offering time-shortened curricula and a smoother transition from one educational level to the next.
- *Participants:* The participants in 2 + 2 programs in California should include community colleges, high schools, and regional occupational centers/programs. 2 + 2 programs are to be developed jointly by administrators and faculty of participating agencies.
- *Criteria for Development:* 2 + 2 programs should be developed in occupations for which the demand for employment is substantiated and the knowledge and skills required are greater than those which can be provided in either a high school, regional occupational center/program, or community college program alone.
- *Curriculum:* The curriculum requirements for a 2 + 2 program should include technical skills, written and oral communications, mathematics, interpersonal skills, science (when appropriate), and job search skills. The curriculum is always competency/skill based.
- *College Credit:* Students completing the high school or regional occupational center/program level courses of a 2 + 2 program may receive college credit

for that work as long as the basic skill competency requirements for the equivalent college course have been satisfied. Students who earn college credit for high school or ROC/P level courses within a formal articulation program may apply those credits toward the major in the 2 + 2 program.

- *Length of Program:* The length of time needed by a full-time student to complete the 2 + 2 curriculum depends on the nature of the program.
- *Program Award:* The student completing a 2 + 2 program receives either an associate degree or certificate of achievement depending on the nature of the program.

Consensus was not reached on the following four items: (a) beginning and ending points of the program, (b) advanced placement, (c) curriculum structure of high school program, and (d) curriculum sequence. It was concluded that consensus was not likely to be achieved on these items with a third round. These four program components are, therefore, left out of the definition at this time. Recommendations for future study of these components are offered later in this report.

It was clear that respondents had difficulty focusing on a standard for 2 + 2 programs. Panelists tended to summarize their personal experiences, citing the current status of programs rather than concentrating on what the standard should be. Most programs currently identified as 2 + 2 are experimental and continuing to evolve. Thus the current state of existing programs appears to be controlling the panelists' definition.

Panel members tended to select statements that gave the most flexibility. The respondents were reluctant to choose a statement that would provide precise parameters. For example, they seemed unwilling to be tied to a rigid grade 11 to grade 14 sequence. This reluctance to provide firm guidelines may be due to a concern that such guidelines may place unwanted constraints on program development. And since the development of 2 + 2 programs has only occurred within the last few years in California, it may be premature to provide firm guidelines.

As previously stated, there were four components in which consensus was not achieved:

- *Beginning and Ending Points.* The first component in which consensus was not achieved dealt with the beginning and ending points of the program, as has already been noted. One reason why panelists were reluctant to agree with a definitive statement may have been a concern that potential high school participants would be excluded if they could enter the pro-

gram at only one point. For example, if the only beginning point was in the eleventh grade, students who became interested in their senior year of high school would not be able to enroll in the program. A few panelists commented that they wanted to see the program begin as early in high school as possible, even in grade 9. Institutions may be reluctant to commit to a specific ending time because although community college programs are presumed to be two years in length, many are not; in fact, programs may range from one to three years in length. It is possible that in California it may be inappropriate to specify a standard for the beginning and ending points of articulated programs.

Another reason for a reluctance to give definitive statements might be a concern about whether there were sufficient vocational course offerings at the secondary level. The number of vocational education courses has decreased as high school graduation requirements have increased; some secondary school districts classify vocational courses as electives and do not accept them as graduation core requirements.

- *Advanced Placement Into Community College Courses.* The second component in which there was not consensus addressed whether or not students completing high school level coursework should receive advanced placement in community college course sequences. Although the panelists were in unanimous agreement that high school students should receive college credit, some panelists thought students should not receive advanced placement, a clearly contradictory state of affairs. Because advanced placement programs already exist in liberal arts programs, the researcher had anticipated that the reverse would occur: namely, that there would be unanimous agreement on students receiving advanced placement in vocational programs and that there would be disagreement on the issuance of college credit. The implications of these results are unclear. Further study will be needed in order to clarify the position of the field on this component.
- *Curriculum Structure of the H.S. Program: Vocational Program Vs. Career Clusters.* The third component addressed the curriculum structure of the high school part of a 2 + 2 program. The panelists were asked whether high school curriculum should be organized around a specific vocational program (occupations that are narrow in scope such as machine tool, welding, and sheet metal fabrication) or around career clusters (occupations that share similar skills and knowledge such as graphic arts, telecommunications, and health). Since this component represents the philosophical basis

for curriculum development, it was, in the investigator's opinion, the component about which agreement within the field was most essential.

The author surmised that one reason for the variation among these responses was that the panelists' opinions reflected the way programs are currently organized. Although examples were given of career clusters, it is possible that panelists were not clear as to the meaning of the term and how such a curriculum would be organized.

Another reason for these varied responses was a concern expressed by at least one panelist that high schools no longer offer the comprehensive vocational education curriculum needed to provide career clusters. This concern may have been felt by many of the panelists and may have been a major reason for their indecision on this item.

- *Sequential or Nonsequential Curriculum*. The fourth component addressed whether curriculum should be sequential or nonsequential. Although a slight majority selected the statement that provided the most flexibility, there was diversity of opinion with this item. The majority in Round 2 selected statements in which curriculum did not have to be sequential. This was a change in direction from Round 1.

  There may be several reasons for preferring flexibility. If curriculum were sequential, then students would have to take the prerequisites for advanced courses. Some educators have been reluctant to establish prerequisites for fear of excluding potential students and curtailing enrollments.

  Another reason might have been a concern by some panelists that the high schools are not able to offer all the courses needed for a complete 2 + 2 program. Panelists might have been reluctant to establish standards that the secondary schools could not meet. Although this latter concern was not expressed it was very likely a factor contributing to the preference for non-sequential programs.

  At least from a theoretical point of view, the field should face up to this issue. Standards should be developed by field practitioners in partnership with state agencies so that local districts have model curricula to strive toward.

Part II

The purpose of the second part of the survey was to find out what educational administrators, both experienced and inexperienced, identified as the barriers to the implementation of 2 + 2 programs. Two comparative groups of instructional ad-

ministrators from community colleges, secondary districts, and ROC/P districts were identified, including the deans or directors of occupational education or holders of comparable titles at the community colleges, secondary districts, and ROC/P districts. They were grouped as "experienced" or "inexperienced." Selected instructional administrators in the two groups were mailed the survey instrument.

The vocational administrators at the twenty institutions that received state-funded articulation grants from CDE and COCCC during 1987-88, along with the secondary district/ROC/P administrators identified as having the strongest linkage to these community colleges, were classified as "experienced." (The researcher was employed at one of the funded colleges, so that college was eliminated from the study.) Two colleges identified the same ROC/P district as their strongest articulation partner. Therefore the total number of respondent sets as part of the experienced group was 19 colleges and 18 secondary districts and ROC/P districts (see Appendix C).

The vocational administrators at educational institutions that did *not* receive articulation grants during 1987-88 were classified as "inexperienced." In order to select the "inexperienced" group, the researcher randomly selected 19 colleges from the remaining 86 colleges not part of the pilot projects. As with the funded group, these colleges were asked to identify the secondary or ROC/P districts with which they had the strongest articulation linkage. The total number of respondent sets as part of the inexperienced group was 19 colleges and 19 secondary districts and ROC/P districts (see Appendix C).

The results of Part I of the survey and copies of the letters of support were mailed to each instructional administrator selected for the study. Seventy-five packets were mailed. Responses were received from 63, an overall 84% response rate.

These instructional administrators were asked to respond to a series of statements describing barriers to program articulation and to give their opinion as to how important each statement was. Respondents were asked to keep in mind the definition of 2 + 2 programs developed in Phase I as they responded to the statements.

The mean scores of responses to items and categories of items were analyzed. The mean scores were calculated for each group within the study: experienced colleges, inexperienced colleges; experienced secondary districts/ROC/Ps, inexperienced secondary districts/ROC/Ps; all colleges; and all secondary districts/ROC/Ps.

Findings and Conclusions of Part II

This phase of the study had two purposes. The first was to identify the barriers to implementation of 2 + 2 programs. The highest ranked barriers fell into one of three categories: communications, resources, and policies.

Items selected in the *communications* category addressed the difficulty of informing students and their parents of the existence and benefits of 2 + 2 programs. The responses demonstrate that current methods for informing students and their parents about 2 + 2 programs need to be strengthened. It is obvious that students are not likely to enroll and persist in these programs if they are not aware of their existence or benefits. The findings of this study demonstrated that there is a need to support development of publicity programs for 2 + 2 programs.

Items selected in the *resources* category addressed the shortage of funds to provide released time for planning and curriculum development. The research demonstrates that community colleges perceived this item as a greater barrier than did secondary districts/ROC/Ps, perhaps because the burden of initiating the agreements and of monitoring the agreements has usually been with the community colleges rather than with the secondary districts/ROC/Ps.

When respondents were asked to suggest the three most important barriers, *attitudinal* barriers were also listed. Attitudes affect *resources*. Unless institutional administrators believe in the concept of 2 + 2 programs, they are unlikely to commit resources to them. When the resources and attitudinal barriers cited were examined together, it was concluded that an underlying lack of commitment by both community colleges and secondary districts/ROC/Ps is a barrier to the institutionalization of these programs. The implications for these findings is that until those commitments are made and adequate funds and administrative support time are provided, implementation of these programs will not move forward.

The item selected in the *policy* category dealt with the current state regulation that limits a community college to using credit by examination as the mechanism for granting college credit for articulated courses taken at the high school or ROC/P level. As noted in findings in Phase I of this study, the Delphi panel was unanimous in urging that college credit be granted for articulated courses.

This barrier may have ranked high because practitioners are unclear as to the process to use within the existing State Education Code. The implications for this finding are that either the current policy should be changed or that ex-

amples which demonstrate to the local community college a process for granting credit for articulated courses be provided under the current policy.

The second purpose of this phase was to determine whether administrators of community colleges on the one hand and of secondary districts/ROC/Ps on the other differed in their perceptions of what the barriers to the implementation of 2 + 2 programs were. This question had three sub-parts, each of which examined the differences in perceptions for two groups. The three sub-parts were as follows: (a) experienced/inexperienced community college administrators, (b) experienced/inexperienced secondary district/ROC/P administrators, and (c) community college and secondary district/ROC/P administrators.

Experienced/Inexperienced Community College Administrators

The research demonstrated that experienced and inexperienced community college administrators perceived the barriers in much the same way. Experience does not appear to lessen the perception of barriers for community colleges. Both groups listed as the most serious barrier the lack of funds to provide faculty released time to develop 2 + 2 programs.

On the item addressing whether there are enough vocational courses offered at the secondary or ROC/P level to implement a 2 + 2 programs, the community college respondents expressed doubt that a sufficient number of such courses were available. As will be noted below, administrators in secondary districts/ROC/Ps do not concur with this perception.

The remaining four items dealt with availability of equipment at the secondary level, funds for administrative planning time, and difficulty informing students and their parents about 2 + 2 programs. As will be seen in the analysis of other sub-parts, these items were ranked as major obstacles to establishing 2 + 2 programs.

In addition, the experienced colleges rated four other items relatively high. These barriers address apathy on the part of faculty at the community college, unwillingness on the part of community college faculty to change curriculum, unwillingness on the part of community college faculty to grant credit for secondary level coursework, and the difficulty of attracting students to the program.

The inexperienced colleges rated the following three items relatively high: granting of credit for articulated courses, lack of communication between faculty at both levels, and lack of counseling time to inform students about the program at the secondary level.

Experienced/Inexperienced Secondary District/ROC/P Administrators

Experienced and inexperienced secondary district/ROC/P administrators differed considerably in their perceptions of barriers to articulation. The secondary district/ROC/P administrators in the experienced group ranked the barriers as less high than did the administrators in the inexperienced group. The experienced secondary district/ROC/P administrators considered most barriers relatively minor. When the rank ordering and means were examined, it became clear that the perception of importance of the barriers drops considerably as the districts gain experience. This finding contrasts with that obtained from the community colleges, where both the experienced and inexperienced administrators generally agreed about the nature and extent of the obstacles in the way of establishing 2 + 2 programs.

Community College/Secondary District/ROC/P Administrators

There were considerable differences between the perceptions of community college and secondary district/ROC/P administrators. Colleges tended to rate barriers as more important than did secondary district/ROC/P administrators. There is agreement, though, between the community college and secondary districts/ROC/Ps as to which barriers are most important, as has already been shown.

Further analysis of the data of the community college and secondary district/ROC/P administrators showed that both experienced and inexperienced community college respondents perceived that insufficient equipment and course offerings were available at the secondary level to offer a 2 + 2 program; the data show that secondary district/ROC/P respondents did not concur with this perception. This difference needs to be overcome in order to convince many community college educators that 2 + 2 programs can be implemented in California.

Two secondary district/ROC/P administrators expressed concern about transporting students to classes. This is not surprising considering the age of the students and the fact that many would neither drive nor have access to cars.

The difficulty of attracting students to 2 + 2 programs was ranked high by all groups, although secondary district/ROC/P administrators ranked this higher than community college administrators. The need for better information about the existence and benefits of 2 + 2 programs recurs throughout this study and needs emphasis.

Table: Highest-Ranked Barriers

Item	Statement	Weighted Total Mean	Category
17	There is a lack of funds to pay for faculty to develop curriculum for 2 + 2 programs.	2.78	R
27	It is difficult to inform parents about 2 + 2 programs and the benefits so that their children are encouraged to participate.	2.73	C
18	There is a lack of administrative time to devote to planning needed in order to implement 2 + 2 programs.	2.72	R
24	At the secondary and ROC/P level, there is a lack of counseling time to inform students of a 2 + 2 program.	2.64	C
25	It is difficult to inform secondary and ROC/P students about a 2 + 2 program.	2.48	C
21	Current state regulations limit a community college to using only credit by examination as the mechanism for granting credit for articulated courses taken at the high school.	2.46	P
26	It is difficult to attract students to enroll in 2 + 2 programs.	2.40	C

Key: C = communications; P = policies; R = resources

Collection of Data from Open-Ended Items

There were two open-ended items asking the respondents to list any barriers which were not on the survey but which they believed existed, and to rank the three greatest barriers.

Although most responses were generally consistent with the rank ordering previously discussed, there were some important differences. As has already been pointed out, some respondents listed attitudinal barriers as being of major importance. Apparently such barriers do exist and are more serious than anticipated at the outset of this study. Further analysis of the comments revealed that an underlying lack of commitment to these programs still exists on the part of both community colleges and secondary districts/ROC/Ps. The respondents mentioned lack of district funds and priority by staff and administrators to work on these programs.

Although much effort has been made in the last few years to initiate community college/high school articulation, not much progress has taken place. This is despite an apparent perception by state agencies that such programs exist on a large scale and that state support to encourage 2 + 2 programs is no

longer necessary. This study suggested that such support must be continued if progress toward implementation is to continue.

Recommendations

The annual plans of the CDE and COCCC have continued to list the implementation of 2 + 2 programs as a goal. With the recent reauthorization of the Carl Perkins Act, there will be funds and an effort to expand the development of Tech-Prep programs. In pursuing that goal, policy-setters need to realize that because the current status of articulation in California is course articulation rather than program articulation, the implementation of 2 + 2 programs in California will take considerable time, effort, and funding. Although *course* articulation is an important beginning point, without *program* articulation a secondary-level student will, most likely, take only one or two articulated courses prior to entering the community college. The result is little reduction in the amount of time it takes that student to complete a community college program. Program articulation would result in a student taking the appropriate math, science, and communication classes as preparation for the community college technical program and would thus lessen the time required to complete a program.

Current efforts toward 2 + 2 program articulation have taken place sporadically and on a course-by-course basis. They have not been widely institutionalized. In order to progress from the current status of course articulation to program articulation, leadership and funding by state agencies are required. Some minimal level of categorical funding to the secondary districts must continue if this effort is not to be lost among the many tasks imposed on the high school districts.

1) Each state educational agency should identify college/high school articulation chairs.

It is recommended that each state educational agency identify college/high school articulation chairs who will work together to develop programs and activities to assist in the establishment of 2 + 2 programs and in the maintenance of existing programs. As the programs become institutionalized, there will be a shift from an instructional emphasis to a student services emphasis, as occurs with articulation programs between community colleges and universities. The institution's effort will focus more on information and counseling than on course sequence development.

An additional suggestion is to form regional articulation resource teams that would be available to work with local educational agencies to implement programs, thus limiting travel and development costs to schools and colleges requesting assistance.

Currently, the secondary districts and community colleges have advisory committees available to assist with occupational program evaluation and development. These committees could be utilized for 2 + 2 programs.

2) The state agencies should jointly sponsor a forum for the purpose of clarifying the program definition and establishing standards for 2 + 2 programs.

This study has demonstrated that California leaders in articulation are reluctant to specify the standards the components of 2 + 2 programs must maintain. Therefore it is recommended that the state agencies jointly sponsor a forum for the purpose of clarifying the definition and establishing standards for these programs. The purpose of this forum would be to discuss the issues raised within this study and determine more precise specifications, including the selection of participants for such programs, the course sequences that should be available, the amount of flexibility to be allowed, the quality of the collaboration taking place between the secondary and community college levels, and the criteria for certification of completion of the programs.

As previously discussed in this report, central issues that need resolution are program philosophy, the issuance of advanced placement for high school level work, and the beginning and ending points of the program. Since the definition of 2 + 2 programs reflects an understanding of the framework for program development, it is important that this clarification be made.

3) The state agencies should jointly sponsor a task force to develop program models.

During the course of this study, some respondents commented that they needed information about successful 2 + 2 programs and the procedures used by such programs. The state educational agencies have sponsored several workshops that have described current programs. Previously, presentations have usually not described internal procedures in any depth. It is hoped that workshops planned during 1990-91 will focus on specific programs and address this recommendation more adequately.

It appears that a 2 + 2 program model (as opposed to a course-by-course model) needs to be developed that is appropriate for the California system. Therefore it is recommended that the state agencies jointly sponsor task forces to this end. Various task forces should probably be formed for the different vocational programs or occupational clusters including, e.g., health science, metal fabrication, and business.

Secondary school districts need to acknowledge that in order to have real 2 + 2 or "Tech-Prep" programs, a core of technology education programs needs to be offered at the secondary level. Many districts have decreased their technology education offerings to the point that it is not possible to have program articulation in the technical fields.

As the program models take shape, the faculty teams developing the curriculum should have representation from high school districts, ROC/Ps, adult schools (when applicable), community colleges, and universities (when applicable). This intersegmental representation will insure standardization of levels of knowledge appropriate for each deliverer within the continuum. It is also recommended that the California Articulation Number (CAN) system be utilized whenever appropriate. The identification of a course by a CAN guarantees that the student will not have to retake a given course if he or she changes institutions.

4) Community college faculty and administrators should visit secondary district/ROC/P facilities for the purpose of familiarizing themselves with what exists.

One of the findings of the study addressed a perception by community college administrators that there were not sufficient vocational course offerings at the high school level. The perceptions of community college and secondary district administrators differed with respect to this issue, and it is not certain whether the community college perception is accurate. Therefore it is recommended that the community college faculty and administrators visit the secondary and ROC/P facilities to familiarize themselves with what exists.

Community college staff need to clarify and communicate their expectations for instruction offered at the secondary level. If the secondary level is lacking in equipment or instructional offerings, alternative approaches should be considered.

5) In order that colleges be able to grant credit for articulated courses, COCCC should clarify the existing regulation and provide examples to practitioners.

The current state regulation on the issuance of college credit only through credit by examination has been identified as a major barrier. It is recommended that COCCC clarify the current regulation and provide examples of a variety of approaches that could be used at the local community college level. In July 1990, a task force was convened for this purpose. The Chancellor's Office was in the process of preparing the task force report at the time this monograph was published.

6) State agencies should continue to jointly fund grants for continued implementation of articulation.

Lack of adequate funds for faculty released time and administrative planning time has been identified as a major barrier. Therefore it is recommended that the state agencies continue to jointly fund grants which will provide the necessary funds to

local districts for the faculty released time and coordination to aid in development and implementation.

In order to receive funds, community colleges and secondary districts will be expected to present a plan for the eventual institutionalization of the program. Community colleges and secondary districts will need to develop a structure that addresses high school-community college articulation in much the same way as the high school-university or community college-university articulation efforts do. This structure would probably have a student services emphasis.

As this paper is being written, the federal Vocational Education Act has been rewritten to include a category for Tech-Prep programs. Funds are expected to be available that are specifically targeted for expanding such articulation programs.

7) State agencies should jointly develop programs and guidelines to promote 2 + 2 programs.

Communicating the existence and benefits of 2 + 2 programs to students and parents has been identified as an important barrier. Educational institutions do not generally have expertise in marketing and public relations. It is recommended that the state agencies jointly develop multi-media programs and guidelines for the dissemination of this information. This program could include masters of a videotape, brochure, newspaper advertisements, public service announcements, etc., which could be adapted for use at the local level at a reasonable cost, resulting in a more effective and less expensive product.

Many colleges have found that the secondary district/ROC/P teachers and counselors are an important link to communicating the existence and benefits of 2 + 2 programs to students and parents. Systems need to be developed to keep these professionals informed about and supportive of the program.

8) State agencies need to sponsor the development of an accountability/evaluation model for secondary-community college articulation.

A tracking system is still not in place to follow students who begin in high school, ROC/P, or adult school and then continue on to a community college or to a four-year institution. Such a system is needed if educators are to verify whether the programs are effective and whether the students are progressing through the educational system as intended.

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Appendix C: List of Participating Colleges and Secondary or ROC/P Districts

Small Enrollment Colleges (Under 7,000)

Experienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
U	Compton	Paramount Unified
R	Hartnell	Mission Trails ROP
R	Kings River	Clovis Unified
R	Mt. San Jacinto	Riverside County ROP

Inexperienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
U	Alameda	Oakland Unified
R	Barstow	Barstow High School
U	Gavilan	Gilroy Unified
S	Irvine Valley	Irvine Unified
S	Los Angeles Mission	Sylmar High School

Medium Enrollment Colleges (7,000–13,000)

Experienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
S	Allan Hancock	North County ROP
S	Chaffey	Chino Unified
R	Sierra	49er ROP
S	Southwestern	Sweetwater Union

Inexperienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
S	Citrus	Glendora Unified
S	Mira Costa	Oceanside Unified
U	Modesto	Stanislaus County Schools
U	San Jose City	Eastside Union
S	Ventura	Ventura Unified

Large Enrollment Colleges (13,000 or More)

Experienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
S	Cerritos	Norwalk-La Mirada Unified
S	Chabot	Hayward-New Haven ROC
U	Cypress	North Orange County ROP
S	DeAnza	Santa Clara Office of Education
S	Diablo Valley	San Ramon Valley Unified
S	Foothill	Mountain View/Los Altos HSD
U	Fresno City	Fresno Unified
U	Fullerton	North Orange County ROP
R	Palomar	Escondido Union
S	Saddleback	Saddleback Unified
S	San Mateo, College of	San Mateo Union

Inexperienced Colleges

Urban/Rural/ Suburban	*Colleges*	*Secondary/ROP (District)*
U	Glendale	Glendale Unified
U	Rancho Santiago	Santa Ana Unified
R	Santa Rosa	Santa Rosa School District
S	West Valley	Campbell Union
U	Riverside	Riverside Office of Education
U	San Joaquin Delta	San Joaquin County Unified
U	San Francisco City	San Francisco Unified
S	San Diego Mesa	San Diego Unified
S	Los Angeles Valley	Los Angeles Unified

Key:

ROP = Regional Occupational Program
ROC = Regional Occupational Center
HSD = High School District

ERIC Clearinghouse for Junior Colleges

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